

S/C78/52/007/003/006/019
B110/B138

12120
AUTHORS: Glazov, V. M., Chien Ts'e-jen, Lin Chen-jian
TITLE: The separate and joint solubility of aluminum and antimony
in Germanium
PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 3, 1962, 576-581

TEXT: The present study is based on investigation of microstructure and microhardness in dependence on the composition of samples obtained by fusion and subsequent prolonged homogenization. 60 binary and ternary Ge alloys with $\leq 10^{-5}$, 0.1-7 atomic % Al_2O_3 (Al_2O_3) (99.99% of Al) and 0.01-2.25 atomic % Sb_2O_3 (Sb_2O_3) (99.99% of Sb) were studied. Single crystals of $\approx 10^{-4}$ purity, grown by the Czochralski method, were used to produce the alloys on the quasibinary Ge-AlSb section. The alloys of sections I and III (Fig. 1) were soaked at $\sim 1100^\circ C$ for 10 hr. The Ge-Sb alloys were prepared in quartz ampuls evacuated to 10^{-3} mm Hg, and the Al-containing alloys in corundum crucibles, and then cooled in water. The binary alloys were annealed at 470; 600; 700; 800, and $900^\circ C$ for 1200; 1000; 850; 800, and 700 hrs; the ternary alloys at 470 and $800^\circ C$

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B110/B130

The separate and joint ...

for 1200 and 600 hrs. A mixture of 20% HF, 20% H₂O₂, and 60% H₂O was used for etching. Some alloys with a low alloying component content had a single-phase structure. A second phase appeared when this increased. Microhardness tests of the solid solution crystals were made on a PMT-3 (PMT-3) apparatus at 20 and 50 G. The isothermal lines of crystal microhardness as a function of alloy composition showed the separate and joint solubility of Al and Sb in Ge (Table 2). The solidus curve in the Ge-Al system has a smooth course. The solubility of Al in Ge passes through a maximum (~1.2 atomic % Al) at 423°C. The solidus in the Ge-Sb system is not retrograde. The solubility of Sb in Ge reaches maximum (~0.08 atomic %) at 588°C. If Al is added to Sb-Ge, the solubility of Sb increases sharply, reaching maximum at the Ge-AlSb section. Equi-atomic addition of Al and Sb causes less increase in the solubility of Al than of Sb. As the chemical AlSb compound is similar in type of bond, crystal lattice and crystal size to Ge, it has greater solubility than its individual components. This is confirmed by the fact that the addition of > 0.1 atomic % separate components (1 Al + 1 Sb) produces a second phase, which dissolves slowly on annealing, due to the slow rate of diffusion in the solid state.

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3/678/42/007/001/006/01.
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The separate and joint...

This means that, with appropriate soaking time in the liquid state, single phase alloys will form directly after crystallization where the alloying component concentration is high. V. S. Zenskov, B. A. Petrov et al. Izv. AN SSSR, Otd. tekhn. n., seriya metallurgiya i topivo, no. 4, 10 (1959), and E. Puzov et al. sb. "Metallurgiya i metallovedeniye" (Metallurgy and Metallography) Metallurgizdat, M. 1958, p. 201. There are 6 figures, 2 tables, and 15 references: 5 Soviet and 10 non-Soviet. The four most recent references to English-language publications read as follows: C. P. Thurmond et. al., J. Chem. Phys., 25, 799 (1956). F. A. Trumbore, A. A. Tartaglia. J. Appl. Phys., 29, no. 10 (1958). F. A. Trumbore et. al. J. Phys. Chem. Solids, 11, 239 (1959). H. Reiss, C. S. Fuller. J. Metals, 8, 276 (1956).

SUBMITTED: December 30, 1960

Card 3/4

2/076/52/107/103/007/019
B110/E116

AD RG: Glazov, V. M., Liu Chen-yuan

TI : Phase equilibrium in Ge-AlSb and Si-AlSb systems

FE 11'Al: Zhurnal neorganicheskoy khimii, v. 7, no. 3, 1962, 591-596

TE : Analysis of each of the combinations of binary systems forming the
te ry systems Ge-Al-Sb and Si-Al-Sb produced the following conclusions:
(1) Each of them is formed by the two eutectic systems Ge(Si)-Al and Ge(Si)-
Sb and a system containing AlSb. (2) The section Ge(Si)-AlSb divides each
te ry system into two elementary ternary systems containing a quasibinary,
ar two eutectic systems. Alloys of 10 - 96 atomic % Ga and 10 - 90 atomic %
Si both with $\leq 10^{-4}$ % impurities) and AlSb ($\leq 10^{-5}$ % impurities) were
fu d by high-frequency heating for good intermixing. Si-AlSb was cooled
ra dly in air, Ge-AlSb in water, to prevent nonequilibrium crystallization.
A r homogenizing the alloys were used for constructing constitution dia-
gi . Microsections were etched in 20% HF, 20% H₂O₂ and 60% H₂O. Micro-
sc analysis showed that the cast specimens have two components, one, which
crystallizes first with regular crystals, and the other a fine dispersed
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S/078/62/007/003/007/012
S110/S118

Phase equilibrium in Ge-AlSb...

eutectic mixture which increases with AlSb content. $\text{Ge} + 33\% \text{ AlSb}$; $\text{Si} + 70\% \text{ AlSb}$ are purely eutectic. In hypoeutectic alloys ($\sim 33\%$ and $70\% \text{ AlSb}$) solid solutions on the basis of Ge and Si ($H_A = 700 - 830 \text{ kg/mm}^2$) crystallize first, while in hypereutectic alloys it is SbAl solutions ($H_A = 450 - 480 \text{ kg/mm}^2$). Ge-AlSb and Si-AlSb are eutectic. The eutectic alloys contain $\sim 33\% \text{ AlSb}$ (Ge-AlSb) and $70\% \text{ AlSb}$ (Si-AlSb). Thermal analysis of 15 - 70 g samples was made on a Zurnakov pyrometer. Two thermal effects were found in each case, one for transformation in the temperature range (a), and the other for isothermal transformation (b) (Ge-AlSb: 820°C ; Si-AlSb: 1014°C). The temperature of (a) varies with composition, but that of (b) remains constant. Addition of AlSb at first lowers and then raises crystallization point. If the AlSb content is increased the height of the (b) plateau rises 33% in Ge-AlSb, and 70% in Si-AlSb. Further increase causes a fall. The liquidus curve of Ge-AlSb corresponding to the primary Ge precipitation displays a smooth curvature. That of Si-AlSb has a salient point which is probably due (by analogy with GaSb and InSb) to additional thermal effects and Al-Sb dissociation products. The relation applying to ideal solutions reads: $\log H_A = L_F/4.57 T_{\text{liq}} + L_F/4.57 T_A$ (1), where L_F = heat

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Phase equilibrium in Ge-AlSb...

6/16/62/01/003/007/01.
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of fusion (cal/g-atom); T_A = melting point of component A; T_{liq} = temperature of liquidus, °K. For Ge-AlSb the dependence of the logarithm of atomic concentration of the solvent on the inverse absolute temperature of the liquidus is an almost straight line with a thermal effect (tan α) of 8.35 kcal/g-atom. Being an almost ideal solution, AlSb only dissociates slightly in Ge. Below 1200°C this dependence is almost linear for Si-AlSb (thermal effect 12.8 kcal/g-atom). Above 1200°C, $\log K_A = 10^3/T_{liq}$ deviates noticeably from (1), due to strong AlSb dissociation. On going into solution Al and Sb are already partially combined as a compound which is very similar in nature to the Ge solvent. In Si, on the other hand, Al and Sb are dissociated. Almost ideal solutions are also obtained by dissolving Ge and Si in fused AlSb (heat of fusion: 14.2 ± 1 kcal/g-mole). S. F. Shizhevskaya and Chien Ts'e-jen are thanked. There are 8 figures, 4 tables, and 12 references: 7 Soviet and 5 non-Soviet. The three references to English-language publications read as follows: E. Hansen, Constitution of binary alloys, New York, Toronto, London, 1958. A. S. Greyner, J. Metals, 4, 10 (1952). F. D. Rosini, National Bureau of Standards Circular, 500, 151, Washington, 1950.

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Phase equilibrium in Ge-AlSb...

SUBMITTED: December 30, 1960

3/078/62/007/003/007/019
R110/R138

Card 4/4

S/C78/E2/007/004/006/016
B110/B101

18.12.85
AUTHORS: Abrikosov, M. Kh., Glazov, V. M., Liu Chen-yūan
TITLE: Investigation of the separate and joint solubility of
aluminum and phosphorus in germanium and silicon
PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 4, 1962, 831-835

TEXT: For investigating the separate and joint solubility of aluminum and phosphorus in germanium and silicon, binary and ternary alloys of germanium and silicon (both monocrystalline, impurities $\leq 10^{-5}\%$) in phosphorus (chemically pure) and aluminum (99.996%) were prepared. Owing to the high vapor pressure of P at high temperatures, Si and Ge were gradually saturated with P by stepwise heating so as to prevent explosion danger. AlP was prepared for the production of ternary alloys situated on the quasi-binary Ge(Si)-AlP sections. Ge-Al-P alloys were prepared by stepwise heating for 8 hrs at 400°C, 24 hrs at 600°C, and 12 hrs at 800°C in the bottom part of the ampulla, and then remelted for 3-5 hrs at 1000°C under periodic shaking. The gradual saturation of Si or Si-Al alloys with P was carried out by heating for 8 hrs at 400°C, 24 hrs at 800°C and 12 hrs at 1000°C.

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Investigation of the separate ...

Remelting was carried out in Ar atmosphere in corundum crucibles by high-frequency heating. Cooling took place in cold water or cold Ar stream. The cooling rate was $>1000^{\circ}\text{C}/\text{min}$, so as to obtain homogeneous alloys. The ternary alloys had the ratios $\text{P} : \text{Al} = 3 : 1, 1 : 1, 1 : 3$. The cast Ge-Al-P samples were homogenized for 850, 700, 700, 500, 500 and 200 hrs at 500, 600, 700, 800, 850 and 900°C , those from Si-Al-P for 850, 700, 700, 500, 500 and 200 hrs at 600, 700, 800, 900, 1000 and 1200°C . Equilibrium was here ascertained by means of microscopic analysis and by measuring the microhardness of the structural constituents in the intermediate stages. Microhardness was determined with a TMT-3 (PMT-3) apparatus at a load of 50 g. The microhardness isotherms of the crystals of the solid solution in the system Ge-P and Si-P showed that maximum solubility (~ 0.45 atom %) of P in Ge exists at 600°C , maximum solubility (~ 0.5 atom %) of P in Si at 1130°C . Al addition causes considerable increase in solubility of P in Ge and in Si. At 800°C , the solubility of P in Si rises in the presence of an equimolecular Al amount by more than three times, in Ge by five times. Maximum solubility of Al and P (1 : 1) in Ge and Si exists at the section Ge(Si)-AlP. Increase in Al and P solubility, when simultaneously present at a ratio of 1 : 1, and the maximum solubility in the Ge(Si)-AlP sections is caused by dissolution of the chemical compound AlP in Ge and Si. AlP is

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Investigation of the separate ...

S/078/01/007/014/006/016
2110/5101

closer to the solvent with regard to type of bond and crystal lattice than its components, and dissolves, therefore, better. There are 3 figures and 2 tables. The most important English-language reference is: J. O. McCaldin, J. appl. Phys., 31, 89 (1960).

SUBMITTED: March 22, 1961

Card 3/3

S/078/62/007/008/004/008
B101/B138

AUTHORS: Chizhevskaya, S. N., Glazov, V. M.

THEM: Investigation into the gallium - tellurium interaction in molten state

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 8, 1962, 1933-1937

TEXT: To study molecular interaction in the liquid Ge - Te system, the viscosity and electrical conductivity of melts containing 33 - 75 atom% Te were measured as a function of temperature between 750 and 1300°C. Results: (1) The compound GaTe, and alloys in its primary crystallization range (group I), have continuously decreasing viscosity and almost linearly rising conductivity. (2) The viscosity of Ga₂Te₃ and neighboring alloys (group II), however, showed 60 - 80°C above melting point. (3) The conductivity of this group also increases with temperature. For Ga₂Te₃ in the solid state it increases exponentially rapidly at melting point and slowly above it, becoming almost independent of

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Investigation into the gallium - ...

S/673/62/007/006/004/008
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temperature around 1700°K. Conductivity only increases during melting if no oxidation takes place. (4) Comparison of the viscosity and electrical conductivity isotherms against the phase diagram shows that GaTe and Ga₂Te₃ have sharp viscosity peaks and conductivity minima. Conclusions: (a) In compositions containing GaTe and Ga₂Te₃ or more tellurium most of the electrons go into the chemical bond and do not participate in the conductivity. The homopolar bond is also preserved in liquid state. (b) The viscosity maxima indicate that GaTe and Ga₂Te₃ also exist as a chemical compound in liquid state. (c) The low viscosity minimum at 25 at. % Te in the GaTe - Ga₂Te₃ concentration range corresponds to a eutectic which was confirmed by microstructural analysis and showed distinct chemical microinhomogeneity. There are 5 figures.

DATE: September 17, 1961

Card 2/2

S/020/02/144/003/011/030
B119/B101

AUTHORS: Glusov, V. M., and Stepanova, M. V.

TITLE: Chemical interaction between nickel and manganese at different temperatures in ternary solid solutions on the basis of copper

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 3, 1968, 505-508

TEXT: Alloys consisting of 90 and 95 at.% Cu and varying amounts of Ni and Mn (obtained from the pure metals by melting in evacuated quartz ampoules) were analyzed chemically and subjected to microhardness investigations after previous thermal treatment. This consisted of: tempering ground samples in vacuo at 900, 700, and 500°C for 2, 15, and 30 hr, respectively, and hardening the samples heated to 900°C in water, or cooling the samples treated at 700 and 500°C in air. The microhardness measured was graphically compared with the chemical composition. The microhardness of samples tempered at 900°C increases with increasing Mn content slowly

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3119/5101

Chemical interaction between...

and almost linearly. The curves for the samples tempered at 700 and 500°C show a minimum microhardness at the point of equiatomic amounts of Ni and Mn (corresponding to the compound NiMn) and a minimum of microhardness with a maximum on each side of it (particularly distinct in samples tempered at 500°C). Thus, the compound NiMn dissolved in Cu is undissociated at 500°C. An increase in the temperature of heat treatment leads to increasing dissociation of the compound, which is complete at 900°C. There are 3 figures. The most important English-language references are: R. B. Hill, M. J. Axon, D.Phil, J. Inst. of Metals, 83, 7, 321 (1954-1955). H. Hansen. Constitution of Binary Alloys, N. Y. - Toronto-London, 1958.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk USSR (Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences USSR). Institut tsvetnykh metallov im. M. I. Kalinina (Institute of Nonferrous Metals imeni M. I. Kalinin)

PRESENTED: February 5, 1962, by I. I. Chernyayev, Academician

Card 2/3

Chemical interaction between...

3/025/62/124/003/010/030
B119/B101

SUBMITTED: December 20, 1961

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S/020/62/45/001/015/018
3145/B101

AUTHORS: Chizhevskaya, S. N., and Glazov, V. M.

TITLE: Study of the chemical interaction between indium and tellurium in liquid state

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 1, 1962, 115 - 118

TEXT: The state of the system In - Te was studied at approximately 500 - 1000°C by measuring the viscosity and electrical conductivity. The viscosity of melts containing 33 - 57 % Te decreased steadily as the temperature rose, whereas the curves of 58.5 - 80 % Te showed clear viscosity maxima. The In_2Te_3 composition had the sharpest maximum. The conductivity of all the compositions increased noticeably with the temperature. The conductivity of solid In_2Te_3 increases exponentially with the temperature (the width of the forbidden band was $\sim 1\text{eV}$ calculated from the inclination of the straight line in the $\log \sigma - 1/T$ diagram), increases sharply between the melting point and 50 - 60°C above it, then slowly, and at more than 400°C above the melting point it increases no longer. For this composition, the increase and the decrease in viscosity correspond respectively to the

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Study of the chemical interaction ...

sharp rise and the slow rise of the curve. The isothermal lines in the composition - conductivity and composition - viscosity diagrams show two distinct minima or maxima, respectively: a singular one for In_2Te_3 and a non-singular one for approximately InTe (slightly displaced in the direction of Te excess). This shows that the compound In_2Te_3 is very stable in its liquid state after melting and does not become partially dissociated until high temperatures are reached. The compound InTe partially dissociates just above its melting point. In In_2Te_3 , homopolar bonds among Te atoms are not affected by melting. The increase in conductivity in the range m.p. - (m.p. + 50 - 60°C) might be due to a rearrangement of structural elements in the melt on the principle of close packing. A eutectic in the phase diagram corresponds to the low viscosity minimum, which is explained by a slight interaction between In_2Te_3 and the products that result from the dissociation of InTe . There are 4 figures. The most important English-language reference is: F. Filling, G. Fischer, S. Mosser, Phys. and Chem. of Solids, 8, 434 (1959).

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of
Sci 2/3 Metallurgy imeni A. A. Baykov)

Study of the chemical interaction ...

3/020/62/145/001/015/018
B145/B101

APPROVED: March 6, 1962, by I. V. Tananayev, Academician

SUBMITTED: February 22, 1962

Card 3/3

Morphological features of crystals of GaP. G. V. Avarkina,
A. S. Burdakovskiy, G. K. Kalyanov, A. S. Smirnova, G. N. Tret'yakov,
M. N. Tekhtareva (10 minutes).

Features of the growth of crystals of silicon carbide of the cubic
modification from the gaseous phase. A. A. Pletyushkin, S. N. Gerin,
L. M. Ivanova (10 minutes).

Investigation of the physical properties of semiconducting compounds
with the lattice of As_2S_3 and As_2S_5 in the melting region and liquid
state. V. M. Glazov, S. N. Chiznevskaya, N. N. Glagoleva (10 minutes).

Report presented at the 3rd National Conference on Semiconductor Compounds,
Kishinev, 16-21 Sept 1963

SALLI, Il'ya Vasil'yevna; GLAZOV, V.M., red.; GLAZOV, V.M., red.;
ARKHANGEL'SKAYA, M.S., red.izd-va; KOLOVINA, E.A.,
tekhn. red.

[Physical principles in the forming of alloy structures]
Fizicheskie osnovy formirovaniya struktury spлавov. Mo-
skva, Metallurgizdat, 1968. 218 p. (UFG 16:12)
(Alloys--Metallography)
(Phase rule and equilibrium)

GLAZOV, V.M.; VERTMAN, A.A.

Characteristics of the structure of liquid eutectics and the character of viscosity - composition diagrams in systems of the eutectic type. Issl. splav. tsvet. met. no.4:85-93 '63.

(MIRA 16:8)

(Eutectics) (Phase rule and equilibrium)

GLAZOV, V.P.; GLAZOV, V.P.; HIGGINS, R. J.; LUKHAT, A. V.; YU CHEN-YUAN
[Yu Chen-yuan]

Physicochemical analysis of systems $Ge(II) - C^{IV}$. Study
Inst. met. n. 14:100-119 '63 (1963: 17:8)

L 17010-63

EWP(q)/EWT(m)/BDS

AFFTC/ASD

RDW/JD

S/078/63/008/005/010/021

AUTHOR: Poretskaya, L. V., Abrikosov, N. Kh. and Glazov, V. M.

TITLE: A study of the Sb - Te system in the vicinity of Sb_2Te_3

PERIODICAL: Zhurnal neorganicheskoy khimii, v. VIII, No. 5, May 1963, 1196-1198

TEXT: The object of the authors' study was the thermal relationship between deviation and stichiometry of Sb_2Te_3 . The alloys were studied both in the liquid and in the solid state. Up to a temperature of 750° Sb_2Te_3 appears to be a stable chemical compound. Above 750° partial dissoniation of Sb_2Te_3 occurs in the liquid state. There are 5 figures. The English-language source reads as follows: G. Offergeld, Van Cakenbergh. Phys. Chem. Sol. Pargamon Press, 11, 310 (1959).

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR

Institute for Metallurgy im.A.A. Baykov of the Academy of Sciences USSR

Card 1/2

L 17429-63

EWB(q)/BDS/EWT(m)

AFFTC JD

ACCESSION NR: AP3004350

S/0076/63/008/006/1921/1927

AUTHORS: Glazov, V. M.; Malyutina, G. L.

56

TITLE: Interaction of germanium with gallium and indium arsenides

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 8, 1963, 1921-1927

TOPIC TAGS: In, As, Ge, Ga, Van't Hoff equation, indium, arsenic, germanium, gallium

ABSTRACT: The scope of the present work is to study the phase equilibrium of the systems Ge-CaAs and Ge-InAs and the solubility of gallium and indium arsenides in germanium at various temperatures. Microscopic analysis shows that alloys containing less than 0.25 atomic % of InAs and 1.5 atomic % GaAs are of a single phase. A conclusion can be made on the basis of microscopic and thermal analysis that Ge-InAs and Ge-CaAs are quasi-binary systems of the eutectic type, and that the eutectic composition is approximately found at a concentration of 50 atomic % InAs and 30 atomic % GaAs. Conclusions are drawn on the thermal stability of liquid and solid solutions of arsenides of gallium and indium in germanium on the basis of an analysis of liquidus lines corresponding to the primary crystallization of germanium with application of Schroeder and Van't Hoff's equation. It is shown that germanium solutions in melted gallium and indium arsenides can be considered as ideal solutions and, on the basis of this and the corresponding

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L 17429-63

ACCESSION NR: AP3004350

liquidus curves, the heats of fusion of GaAs and InAs were evaluated. Orig. art.
has: 6 figures and 3 tables.

ASSOCIATION: none

SUBMITTED: 06Sep62

DATE ACQ: 21Aug63

ENCL: 00

SUB CODE: PH, CH

NO REF SCV: 010

OTHER: 008

Card 2/2

GLAZOV, V.M.; MALYUTINA, G.L.

Solubility of gallium and indium phosphides in germanium. Zhur.
neorg. khim. 8 no.10:2372-2375 O '63. (MIRA 16:10)

(Gallium phosphides)	(Indium phosphides)
(Germanium)	(Solubility)

L 25152-65 EWT(m)/ENP(w)/EWA(d)/T/ENP(t)/ENP(b) Pad IJP(-) 3D/RY
ACCESSION NR: AP5001618 S/0279/64/000/006/0148/0150

AUTHOR: Vertman, A. A. (Moscow); Glasov, Y.M. (Moscow) 18/23

TITLE: Microheterogeneity in solid solution crystals of nickel and carbon alloys

SOURCE: AN SSSR. Izvestiya. Metallurgiya i gornoye delo, no. 6, 1964, 148-150

TOPIC TAGS: nickel carbon alloy, iron carbon alloy, solid solution, microheterogeneity, microhardness, annealed nickel carbon alloy

ABSTRACT: Examination of the microhardness of Ni-C systems containing 0.10-2.56 wt. % C showed that as the C content increased the microhardness decreased very rapidly in the vicinity of the finer graphite inclusions and not as rapidly near the coarse inclusions. This less rapid decrease was associated with the coagulation of the submicroscopic particles of the second phase. The rapid decrease in microhardness was explained in that the solid solution crystals in the

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ism but also by microheterogeneity of the melt. microheterogeneity was

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L 25152-65
ACCESSION NR: AP5001618

ed by electron microscope findings. Prolonged homogenizing annealing eliminated the effect of microheterogeneity on microhardness. After annealing the solid solution crystals have the same microhardness as alloys saturated at 1100C, with alloys containing less C attaining this value more rapidly than high carbon alloys. If the Fe-C system is compared with the Ni-C system, it can be assumed that graphite heterogenizes even primary austenite, forming colloidal type solutions. Orig. art. has: 2 figures

ASSOCIATION: None

SUBMITTED: 29Oct63

NR REF SOV: 006

ENCL: 00

SUB CODE: MM

OTHER: 000

Card 2/2

ACCESSION NR: AP4039654

S/0181/64/006/006/1684/1687

AUTHORS: Glazov, V. M.; Chizhovskaya, S. N.

TITLE: A study of the magnetic susceptibility of germanium silicon and compounds with ZnS lattices in the regime of fusion and in liquid state

SOURCE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1684-1687

TOPIC TAGS: magnetic susceptibility, germanium, silicon, gallium, indium, tellurium, calcium, quartz ampule, corundum container, argon, helium, platinum rhodium thermocouple, diamagnetic property

ABSTRACT: The authors studied the magnetic susceptibilities of Ge, Si, GaSb, InSb, GaAs, InAs, ZnTe, CdTe, Ga_2Te_3 and In_2Te_3 in the fusion regime and in the liquid state by the Faraday method described by A. A. Vertman and A. M. Samarin (Zav. lab., 24, 309, 1958). Ge, Si and Sb, Ga and In were monocrystalline with carrier concentrations ranging from 10^{14} to $10^{16}/\text{cm}^3$. All other compounds were microcrystalline with the percentage of impurities less than 10^{-4} . Each of the specimens of Ge, GaSb, InSb, GaAs, InAs, Ga_2Te_3 (diameter of 12 mm and a height of 10 mm) was placed in a quartz ampule. Silicon specimens (10 mm in diameter and 6 mm high) were placed in corundum containers. The measurements were taken in an atmosphere of argon for

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ACCESSION NR: AP4039654

Ge and other compounds, while a helium atmosphere was used for Si. The magnetic field used was 5000 oersteds. Temperatures were measured by Pt-Rh-Pt thermocouples. The experiments showed that all the materials had diamagnetic properties in both the solid and liquid states. At the time of fusion a discontinuous fall in the permeability was observed in all the cases. On the basis of the magnitude of this discontinuity at the temperature of fusion and the nature of the temperature dependence of the permeability, it is possible to classify these substances into two groups. In the first group were Ge, Si, and compounds of the type $AlIIB^V$. At the time of fusion the magnetic susceptibility of these substances decreased by 20 to 30%, and on further heating of the melt it tended to increase. The second group consisted of tellurides of elements of the 2nd and 3rd group of the periodic table. For these substances the susceptibility decreased by 9 to 10% at fusion, and further heating reduced it still more. The authors thank Professor Ya. G. Dorfman for his attention to this work and his valuable advice during discussions. A. A. Vertaun and Ye. S. Filippov are thanked for their help in conducting the experiments. Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Institut metallurgiy im. A. A. Baykova AN SSSR, Moscow (Institute of Metallurgy, AN SSSR)

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ACCESSION NR: AP4039654

SUBMITTED: 20Jul63

SUB CODE: SS

NO REF SOV: 009

ENCL: 00

OTHER: 005

Cord 3/3

ACCESSION NR: AP4019501

S/0078/64/009/003/0759/0760

AUTHORS: Glazov, V.M.; Chizhevskaya, S.N.

TITLE: Viscosity and electric conductivity of copper iodide in the molten and liquid state

SOURCE: Zhurnal neorg. khimii, v. 9, no. 3, 1964, 759-760

TOPIC TAGS: copper iodide, liquid copper iodide, molten copper iodide, viscosity, electric conductivity, hysteresis, ionic bond, ionic liquid

ABSTRACT: The temperature dependences of the viscosity and of the electric conductivity of copper iodide were determined to study the change in the nature of the chemical bond and the structure of CuI_2 on fusion and further heating. The viscosity and electrical conductivity of anhydrous CuI_2 were measured in a vacuum apparatus described by D.A. Petrov and V.M. Glazov (Zavodsk. laboratoriya, No. 1, 34 (1958)). The measurements show a gradual decrease in the

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ACCESSION NR: AP4019501

viscosity, starting at the fusion temperature of the CuI_2 . The electric conductivity in the solid (alpha-modification) increases gradually with temperature, then rises sharply at the melting point, and increases very slightly thereafter as the temperature of the liquid increases. There is no hysteresis in either property on cooling the melt. In view of this plus the fact that no radical changes occur in the structure of the molten CuI_2 on further heating, it is concluded that the molten copper iodide is an ionic liquid with Cu^+ and I^- as the structural units. Orig. art. has: 2 figures.

ASSOCIATION: None

SUBMITTED: 19Jul63

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: PH

NO REF SOV: 004

OTHER: 004

Card 2/2

ACCESSION NR: AP4010762

S/0020/64/154/001/0193/0196

AUTHOR: Glazov, V. M.; Chizhevskaya, S. N.

TITLE: Investigation of the physical-chemical properties of zinc and cadmium telluride melts.

SOURCE: AN SSSR. Doklady*, v. 154, no. 1, 1964, 193-196

TOPIC TAGS: zinc telluride, cadmium telluride, zinc tellurium system, cadmium tellurium system, electrical conductance, viscosity, conductance isotherm, viscosity isotherm, conductivity, covalent bonding, zinc tellurium chain structure, cadmium tellurium chain structure

ABSTRACT: The electrical conductance and viscosity of Zn-Te and Cd-Te systems containing 30-70 at. % Te were studied at temperature intervals from 450-1400C and 300-1250C. The temperature-conductance curves (fig. 1) for ZnTe and CdTe compositions show low conductance in the solids, sharp increase on melting, and another sharp increase about 60C and 120C respectively, above the

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ACCESSION NR: AP4010762

melting temperature of the materials. Even a $\pm 5\%$ deviation from the stoichiometric compositions changes the conductances and viscosities of the systems. It was found that the conductance isotherms rise very sharply from a minimum with excess Zn or Cd and rise less rapidly with excess Te; and the viscosity isotherms are at a maximum and fall with excess of either of the components. With increasingly high temperatures the maximum and minimum peaks lose their singular character and flatten out. The nature of the conductivity of these materials in transition from solid to liquid is discussed. The absence of an ionic liquid and the preservation of covalent bonding on melting is set forth. A chain structure between the Te and Zn(Cd) atoms is supported. Orig. art. has: 4 figures

ASSOCIATION: None

SUBMITTED: 28Jun63

DATE ACQ: 10Feb64

ENCL: 01

SUB CODE: ML

NR REF SOV: 006

OTHER: 002

Card 2/82

KHARUSHCHEV, M.M., dokt. tekhn. nauk, otv. red.; BERNKOVICH,
Ye.I., kand. tekhn. nauk, red.; GLAZOV, V.N., kand.
tekhn. nauk, red.; GRIGOROVICH, T.K., kand. tekhn.
nauk, red.; SARKISIAN, D.A., kand. tekhn. nauk, red.

[Methods of testing for microhardness. Testing equipment]
Metody ispytaniia na mikrovernost'. Pribury. Moskva,
Moskva, 1966. 284 p. (MLA 18-8)

1. Sevast'yanova, G. I. et al. Ed., 1963.

L 54988-65 EPA(s)-2/EWT(m)/EPF(n)-2/T/EWP(t)/EWP(b)/EWA(c) Pt-T/Px-l IJP(c)
ACCESSION NR: AP5011921 JD/WW/JG UR/0363/45/001/003/0307/0310
54-143:520.183
AUTHOR: Glazov, V. M.; Chizhevskaya, S. N.
TITLE: Structural model of shortrange order in melts of germanium and silicon
SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 3, 1965, 307-310
TOPIC TAGS: structural evaluation, germanium, silicon, ordered structure, crystal

"APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000500020005-9

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APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000500020005-9"

L 54988-65

ACCESSION NR: AP5011921

order in both germanium and silicon melts is a diffuse space-centered cubic. At 1000°C, the concentration of electrons in germanium and silicon melts is $1.80 \cdot 10^{23} \text{ cm}^{-3}$ and $2.16 \cdot 10^{23} \text{ cm}^{-3}$ respectively. At 1000°C, the electron mobility in solid phases of Ge and Si is $370 \text{ cm}^2/\text{volt}/\text{sec}$ and $16 \text{ cm}^2/\text{volt}/\text{sec}$ and in liquid phases of Ge and Si is $0.4 \text{ cm}^2/\text{volt}/\text{sec}$ and $0.3 \text{ cm}^2/\text{volt}/\text{sec}$, respectively. The electrical conductivities of Ge and Si calculated on the basis of electron mobilities

L 4024-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD
ACCESSION NR: AP5022257 UR/0363/65/001/007/1079/1085
546.46'25:541.5

AUTHOR: Glazov, V. M.; Glagoleva, N. N.

TITLE: Change of bond character in compounds of magnesium with Si, Ge, Sn, and Pb during their fusion

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 7, 1965, 1079-1085

TOPIC TAGS: chemical bonding, magnesium compound, silicon compound, germanium compound, tin compound, lead compound, electric conductivity

ABSTRACT: The paper is devoted to a detailed study of the temperature dependence of the electrical conductivity of Mg_2B^{IV} compounds in the solid and liquid state, carried out in order to determine the changes in bond character during their fusion. Samples of Mg_2Si , Mg_2Ge , Mg_2Sn , and Mg_2Pb were prepared, and their electrical conductivity was measured between room temperature and 1200C. From these data it is concluded that on melting, all four compounds change into a metal-like state. This indicates that at the instant of fusion, a large number of electrons are set free. The predominant bond type in the solid state is

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L 4024-66
ACCESSION NR: AP5022257

covalent. It is emphasized that from the nature of the electrical conductivity jumps during fusion and by taking into account the absolute values of the conductivity in the solid and liquid state, reliable conclusions can be drawn regarding the nature of the chemical bonding in the solid phase. Such an analysis shows that the compound Mg_2Pb is a semiconductor. Orig. art. has: 6 figures and 2 tables.

ASSOCIATION: Institut stali i splavov (Institute of Steel and Alloys)

SUBMITTED: 12Mar65

ENCL: 00

SUB CODE: LC, MM

NO REF SOV: 017

OTHER: 021

Card

2/2

L 00031-66 EWT(m) DIAAP
ACCESSION NR: AP5020308

UR/0186/65/007/004/0475/0479
543.53

AUTHOR: Glazov, V. M.

TITLE: The use of several radioactive isotopes¹⁹ in radiochemical analysis

SOURCE: Radiokhimiya, v. 7, no. 4, 1965, 475-479

TOPIC TAGS: radiochemistry, scintillation counter, chemical analysis

ABSTRACT: The use of several radioisotopes in radiochemical analysis reveals much information on different chemical phenomena and in some cases is the only method of investigation. The use of several radioactive isotopes in radiochemical analysis also shortens the time required for the experiment. This work was concerned with the use of several radioisotopes with different forms of radiation. The identification of radioisotopes with any form of radiation may be relatively simply determined by using a universal scintillation counter, the electronic block diagram of which is shown in Fig. 1 of the Enclosure. The count rate from a multicomponent radioactive tagging with simultaneous use of α , β and γ isotopes is conducted as follows: (1) the count rate is obtained for α -isotope using detector III (Fig. 1) based on $ZnS(Ag)$; (2) the γ background is obtained with detector II, which has a

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L 00031-66
ACCESSION NR: AP5020308

stilbene crystal, by placing an aluminum absorber between the counter and the sample which absorbs all β ; (3) the plate is removed and the total $\beta+\gamma$ from which β is obtained by difference; (4) the γ count is obtained with the first scintillation counter which has a NaI (Tl) crystal. In this method it is possible to use radioactive β isotopes with complex spectrum as well as isotopes in equilibrium with daughter decay products. The accuracy of the experiment depends to a great extent on the stability of the scintillation spectrometer. Experiments have shown that stability of the scintillation spectrometer in Fig. 1 is achieved after a 4-5 hr warm-up. Scalers PS-10000 do not affect the stability of the spectrometer and are turned on 30 min before operation. Under these conditions the accuracy of measurement of the count rate from each of the two radioactive isotopes which are in the chemical compound is 2-3%. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 02Mar65

ENCL: 01

SUB CODE: MP, UC

NO REF SOV: 003

OTHER: 000

Card 2/3

L 00031-66
ACCESSION NR: AP5020308

ENCLOSURE: 01

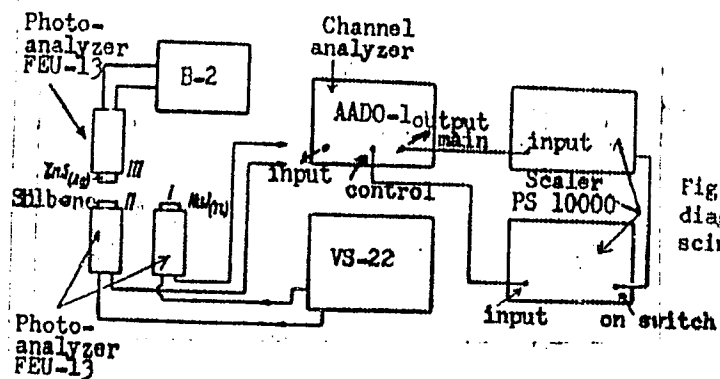


Fig. 1. Electronic block diagram of the universal scintillation counter.

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L 53927-65

ACCESSION NR: AP5010584

the compounds. When $A^{III}B^V$ compounds melt, a liquid of high coordination is formed, and part of the valence electrons are converted to an electron gas; this also applies to $A_2^{II}B^{IV}$ compounds. In the case of $A^{III}B^V$ and $A^{IV}B^{IV}$ compounds, this also applies to

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gac
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APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000500020005-9"

L 54701-65 EWT(m)/EWG(m)/EWP(t)/EWP(b) IJP(c) RDW/JD
ACCESSION NR: AP5013445

UR/0020/65/152/001/0094/0097

AUTHOR: Glazov, V. M.; Krestevnikov, A. N.; Glagolava, N. N.

TITLE: Physico-chemical analysis of binary systems of tellurium with elements of the germanium subgroup in the liquid phase

SOURCE: AN SSSR. Doklady, v. 162, no. 1, 1965, 94-97

TOPIC TAGS: binary system, tellurium, germanium subgroup, tin, lead, alloy

ABSTRACT: Chemical interaction in the germanium-, tin-, and lead tellurides was studied in the liquid phase in order to elucidate the observed thermal stability of these compounds above their respective melting points. Several alloys of Te with Ge, Sn, and Pb were prepared by fusing high purity metal mixtures in evacuated (up to 10^{-3} mm Hg) quartz ampules. The atomic ratio of Te:Ge varied from 1:9 to 9:1, that of Te:Sn varied from 2:8 to 9:1, and that of Te:Pb varied from 1:9 to 8:55:1.45. Dependence of viscosity and electrical conductivity upon temperature was measured in the 730° to 1200°C range and correlated with the phase diagrams of the Te-Ge, Te-Sn, and Te-Pb systems. For all three systems, maxima of viscosity and minima of electrical conductivity coincide with alloys containing 50 atomic %

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L 54701-65

ACCESSION NR: AP5013445

of Te. The extrema of viscosity and electrical conductivity indicate that melting of germanium telluride has a congruent character. A eutectic transition $La+GeTe$ in the germanium telluride system occurs at 725°C . Slightly above their melting points, germanium- and tin tellurides are substantially dissociated while lead telluride is only very slightly dissociated. A substantial dissociation of the lead telluride melt first occurs about $50^{\circ}\text{--}70^{\circ}\text{C}$ above the melting temperature. Orig. art. has: 1 table and 3 figures. The paper was presented in Academician T. V. Tananayev on Nov. 11, 1964.

Card 2/2 MB

L 26448-66

EWI(m)/ETC(f)/EWG(m)/EWP(t) RDW/JD

L 24128-66 EWT(m)/EWP(w)/ETC(f)/ENG(m)/T/EMP(t) RIN/JD

ACC NR: AP6011316

SOURCE CODE: UR/0363/66/002/003/0453/0460

AUTHOR: Glazov, V. M.; Krestovnikov, A. N.; Glagoleva, N. N.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy Institut stali i splavov); Institute of Metallurgy im. A. A. Baykov (Institut metallurgii)

TITLE: Investigation of electric conductivity and viscosity of smelts in Bi-Se, Bi-Te, and Sb-Te systems

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no.3, 1966, 453-460

TOPIC TAGS: electric conductivity, bismuth, selenide, telluride, antimony, metal melting, stress concentration, temperature dependence

ABSTRACT: An investigation of viscosity and electric conductivity of Bi-Se, Bi-Te, and Sb-Te alloys over a wide range of temperatures and concentrations has been carried out. On the basis of isotherm analysis, it is shown that bismuth selenide is stable after melting in all temperature ranges investigated. Bismuth telluride dissociates during melting while antimony telluride is relatively stable during melting and begins to dissociate after a certain amount of overheating. The correlation between characteristic concentrations and

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UDC: 546.3-19-87-23;546.3-19-87-24;546.3-19-86-24

L 247 -66

ACC NR: AP6011316

viscosity and electric conductivity is recorded. Orig. art. has:
9 figures and 1 table. [Based on author's abstract] [NT]

SUB CODE: 11/ SUBM DATE: 07Jul65/ ORIG REF: 018/ CTH REF: 004/

Card 2/2

L 23065-66 EWT(1)/EMP(e)/EWT(m)/ETC(f)/EMO(m)/T/EMP(t) EMP(e) DS/JJ/WJ/NT/WH
ACC NR: AP6010055 SOURCE CODE: UR/0032/66/032/003/0290/0300

AUTHOR: Glazov, V. M.; Yevseyev, V. A.; Pavlov, V. G.

ORG: none

TITLE: Methods of investigation of thermoelectric characteristics of semiconductors in liquid state

SOURCE: Zavodskaya laboratoriya, v. 32, no. 3, 1966, 290-300

TOPIC TAGS: semiconductor, thermoelectric power, thermoelectric property

ABSTRACT: Based on 1953-65 Soviet and 1949-63 Western sources, this review sets forth the methods of investigation of the coefficient of thermoelectric efficiency $z = \alpha^2 \sigma / \chi$, where α is the coefficient of thermo-emf, σ is the electric conductivity, and χ is the heat conductance of the semiconductor melt in question. Such investigation is important for developing high-temperature molten-semiconductor thermo-generators. These methods of measuring thermo-emf and electric conductivity of melts are briefly described: a differential method; an electrode-and-probe method with the melt exposed to air; a d-c compensation method with a fehral electrode (used for testing Cu_2O); a closed-crucible noncorrodible-element method; an outfit for chemically-active melts kept in vacuum or inert or reducing gas; an integral method; a transient method (measurement of time-variation of the voltage drop,

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UDC: 537.311.33

L 23065-66

ACC NR: AP6010055

4

resistance or temperature drop after electric-supply turn-off); a contactless method for measuring electric conductivity. These methods of measuring heat conductance are reported: a stationary-measurement method for testing Te, InSb , Te-Se ; a shallow-graphite² container method for measurements at 1000--1800C; a coaxial-cylinder method of measuring Bi_2Se_3 and Bi_2Te_3 melts; a transient probe method; a crystal-growing method. Orig. art. has: 13 figures and 19 formulas. [03]

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 039 / OTH REF: 012/ ATD PRESS: 4234

Cord 2/2 FW

L 29794-66 EMT(m)/EPC(f)/SWP(t)/ETI IJP(c) DS/ROW/JD

ACC NR: AP6015067 (N) SOURCE CODE: UR/0363/66/002/005/0844/0849

AUTHOR: Vukalovich, M. P.; Fedorov, V. I.; Okhotin, A. S.; Glazov, V. M.

ORG: Moscow Power Institute (Moskovskiy energeticheskiy institut); Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Study of the heat conductivity of antimony and bismuth tellurides in the liquid phase

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 5, 1966, 844-849

TOPIC TAGS: bismuth compound, antimony compound, telluride, heat conductivity, electric conductivity, phonon scattering, semiconductor research

ABSTRACT: A technique was developed for measuring the heat conductivity of liquid semiconductors by determining the radial heat flux in a ring gap with the aid of graphite cylinders which insure reliable and reproducible results. The temperature dependence of the heat conductivity of antimony and bismuth tellurides was thus measured in the liquid state up to 1200°C and its linear increase during heating was demonstrated. The electronic component of the heat conductivity was determined in

Card 1/2

UDC: 546.86'241 + 546.87'241

L 29794-66

ACC NR: AP6015067

melts of these compounds on the basis of electrical conductivity data. The mechanism of heat conductivity in liquid Bi_2Te_3 and Sb_2Te_3 -type semiconductors was found to be due (in addition to the electronic and lattice components) to a third component related to liquid and phonon-liquid scattering. A correlation was noted between the results obtained and the data of physicochemical analysis of the binary liquid systems Bi-Te and Sb-Te. Orig. art. has: 6 figures.

SUB CODE: 20/ SUBM DATE: 24Aug65/ ORIG REF: 015/ OTH REF: 006

Card 2/2 *W*

L 29805-66 EWT(m)/ETC(f)/ENP(t)/ETI IJP(c) RDW/JD
 ACC NR: AP6015068 (N) SOURCE CODE: UR/0363/66/002/005/0850/0854
 AUTHOR: Glazov, V. M.; Krestovnikov, A. N.; Yevseyev, V. A.; Ayvazov, A. A. 52
 ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)
 TITLE: Study of the thermal emf of germanium and tin tellurides in the solid and liquid state
 SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 5, 1966, 850-854
 TOPIC TAGS: germanium compound, tin compound, telluride, thermal emf, electric conductivity, *temperature dependence*

ABSTRACT: The temperature dependence of the thermal emf of tin and germanium tellurides were studied in order to investigate their physicochemical nature and changes in bond character associated with the fusion of these compounds. To this end, a special apparatus was constructed which permitted measurements of differential thermal emf over a wide temperature range in a vacuum or in an inert gas atmosphere in both the liquid and solid state. A correlation was noted between the character of the temperature dependence of the thermal emf and the electrical conductivity of

Card 1/2

UDC: 546.289'241 + 546.811'241

L 29805-66

ACC NR: AP6015068

germanium and tin tellurides in the liquid and solid state. The presence of hole conductivity and the decrease in thermal emf with rising temperature of the melt confirm the conclusion, reached on the basis of electrical conductivity measurements, that these tellurides remain semiconductors after they have melted, and indicate that these substances are not semimetals in the solid state. Orig. art. has: 4 figures and 1 table.

SUB CODE: 20,07/ SUBM DATE: 13Sep65/ ORIG REF: 013/ OTH REF: 003

Card 2/2 *IV*

L 46046-66 EXT(m) (TIP(t)) TEL. IMP(s) JD
ACC NR: AT6022711 SOURCE CODE: UR/2848/66/000/041/0221/0231

AUTHORS: Krestovnikov, A. N.; Glazov, V. M.; Ivliyeva, V. I.; Makhmudova, N. M.

ORG: Moscow Institute of Steel and Alloys, Department for Physico-chemical Investigation of Manufacturing Processes of Semiconductor Materials and Pure Metals (Moskovskiy institut stali i splavov, Kafedra fiziko-khimicheskikh issledovaniy protsessov proizvodstva poluprovodnikovykh materialov i chistykh metallov)

TITLE: Investigation of electrical conductivity of alloys belonging to the system Sb_2Te_3 - Sb_2S_3 in the solid and liquid state

SOURCE: Moscow. Institut stali i splavov. Sbornik, no. 41, 1966. Fizicheskaya khimiya metallurgicheskikh protsessov i sistem (Physical chemistry of metallurgical processes and systems), 227-231

TOPIC TAGS: antimony compound, antimony sulfide, tellurium containing alloy, electric conductivity, semiconductor conductivity, alloy phase diagram

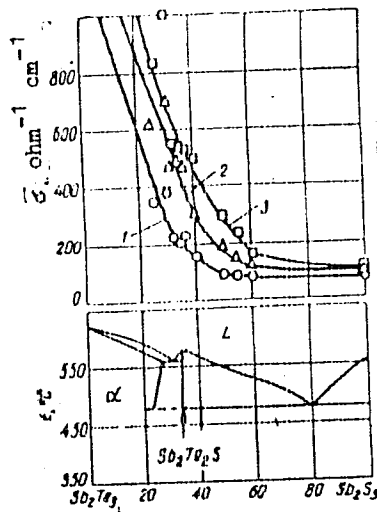
ABSTRACT: The electrical conductivity of the system Sb_2Te_3 - Sb_2S_3 was studied as a function of composition and temperature. The investigation supplements the results of N. Kh. Abrikosov and V. I. Ivliyeva /No further reference given. Note of abstracter/. The experimental procedure is described by D. A. Petrov and V. M. Glazov (Zavodskaya laboratoriya, 1958, No. 1). The experimental results are presented graphically (see Fig. 1). It was found that all alloys of this system are semiconductors in the liquid state. From the appearance of the conductivity-temperature-composition curves, it is

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L 46036-56

ACC NR: AT6022711

Fig. 1. Comparison of the concentration dependence of electrical conductivity of melts of the system $\text{Sb}_2\text{Te}_3 - \text{Sb}_2\text{S}_3$ with the phase diagram of this system. (The data for the construction of the phase diagram were taken from the work of N. Kh. Abrikosov and V. I. Ivliyeva). 1 - 600C, 2 - 700C, 3 - 800C.



concluded that, contrary to the assertion of N. Kh. Abrikosov and V. I. Ivliyeva, no ternary compound exists in this system. Orig. art. has: 3 graphs.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 001

Card 2/2 117

L 46032-66 TWT(m)/TWP(t)/TPI LIT(c) ID/MI/JT

ACC NR: AT6022712

SOURCE CODE: UR/2848/66/000/041/0232/0236

AUTHORS: Krestovnikov, A. N.; Glazov, V. M.; Glagoleva, N. M.; Situlina, O. V.

ORG: Moscow Institute of Steel and Alloys, Department for Physico-chemical Investigation of Processes for the Manufacture of Semiconductor Materials and Pure Metals (Moskovskiy institut stali i splavov, Kafedra fiziko-khimicheskikh issledovaniy protsessov proizvodstva poluprovodnikovykh materialov i chistykh metallov)

TITLE: Investigation of viscosity and electrical conductivity of binary alloys of tellurium with germanium, tin, and lead in the liquid state

SOURCE: Moscow. Institut stali i splavov. Sbornik, no. 41, 1966. Fizicheskaya khimiya metallurgicheskikh protsessov i sistem (Physical chemistry of metallurgical processes and systems), 232-238

TOPIC TAGS: tellurium containing alloy, germanium containing alloy, lead containing alloy, tin containing alloy, electrical conductivity, fluid viscosity

ABSTRACT: The viscosity and electrical conductivity of the binary systems TeGe, TeSn, and TePb were investigated. The alloys were prepared after the method of L. Ya. Krol', A. Ya. Nashel'skiy, and M. D. Khlystovskaya (Zavodskaya laboratoriya, 1961, No. 2). The experimental procedure for the determination of viscosity and electrical conductivity is described by V. M. Glazov and S. M. Chizhevskaya (DAN SSSR, 1964, t. 154, No. 1). The experimental results are presented in tables and graphs (see Fig. 1). It was found that in order to retain a stoichiometric composition in

Card 1/2

L 46037-66

ACC NR: AT6022712

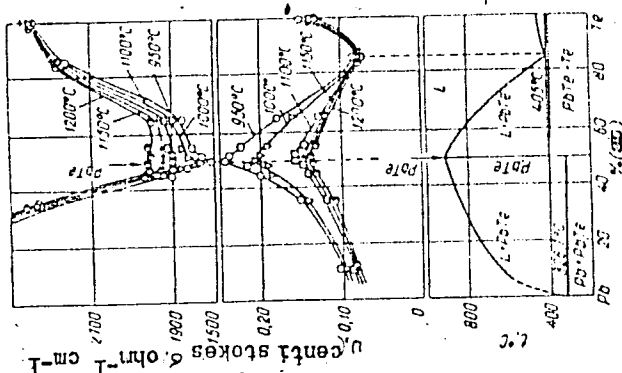


Fig. 1. Isotherms for the viscosity and electrical conductivity of melts for the system lead-tellurium.

the systems GeTe and SnTe it is necessary to maintain an equilibrium vapor pressure of Te above the corresponding systems. The compound PbTe is relatively stable, but it is recommended that, when working with this compound, care is to be exercised in not exceeding its thermal stability limits. Orig. art. has: 1 table and 9 graphs.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 010/ OTH REF: 001

Card 2/2

L 10018-67 EWP(t)/ETI IJP(c) JD/JG/AT

ACC NR: AP6036323

SOURCE CODE: GE/0030/66/018/011/K029/K031

AUTHOR: Abdullaev, G. B.; Malsagov, A. U.; Glazov, V. M.

ORG: Institute of Physics, Academy of Sciences of the Azerbaidzhan SSR, Baku

TITLE: Thermoelectric power of $AlB^{III}C_2^{VI}$ type compounds in the solid and liquid state

SOURCE: Physica status solidi, v. 18, no. 11, 1966, K29-K31

TOPIC TAGS: gadolinium compound, copper compound, selenium compound, tellurium compound, indium compound, thermoelectric power, thermocouple

ABSTRACT: The thermoelectric power of $CuGaSe_2$, $CuGaTe_2$, $CuInSe_2$, and $CuInTe_2$ as a function of temperature between 100 and 1200C was measured in the solid and liquid state of the compounds. Measurements of the thermal emf were carried out by the contact method in an inert gas, and readings were taken from several samples of each particular compound. The investigations showed that in the case of $CuGaSe_2$, $CuGaTe_2$, and $CuInTe_2$, the thermoelectric power rises with temperature up to a certain value and then decreases monotonically up to the fusion temperature. In the liquid phase the emf decreases linearly with temperature. The thermoelectric power of $CuInSe_2$ increases only up to 180—200C and then falls almost linearly. An abrupt drop occurs under fusion conditions, probably due to the growth of charge-carrier concentration and a decrease in the difference of electron hole mobilities. All compounds

Card 1/2

L 10018-67

ACC NR AP6036323

exhibit an abrupt increase in thermoelectric power if a heavier element is substituted for the anion. Orig. art. has: 4 figures and 1 table.

SUB CODE: 20/ SUBM DATE: 05Oct66/ ORIG REF: 002/ OTH REF: 003/ ATD PRESS: 5105

Card 2/2 egk

ACC NR: ART004001

SOURCE CODE: GR/0277/55/000/11/0277/000

AUTHOR: Bykov, V. A.; Glazov, V. P.

TITLE: Strength of constructional alloys at low-cycle fatigue tests in the presence of stress concentration

SOURCE: Ref. zh. Mashinostroitel'nyye materialy, konstruktsii i raschet detaley mashin. Gidropriwod, Abs. 10.48.28

REF SOURCE: Tr. Leningr. korablestroit. in-ta, vyp. 49, 1965, 21-30

TOPIC TAGS: alloy, fatigue strength, constructional alloy, alloy fatigue strength, low cycle fatigue strength

ABSTRACT: The results are given of low-cycle fatigue tests on specimens of two structural alloys subjected to alternating pulsed elongation, bending and torsion with stress concentration as well as of similar test at pulsed pressure conducted on welded containers. The low-cycle fatigue strength tests of the laboratory specimens gave a satisfactory reproduction of the performance of the material under actual construction conditions and the test data obtained may be ---

Card 1/2

UDC: 669.018:539.434:620.178.3

ACC NR: AR7004681

used to evaluate load carrying capacities and service life of parts from this material. The tested alloys being materials with ductile properties are capable of withstanding without fatigue failure stresses that equal the yield point at a higher number of cycles which permits calculation of low-cycle strength of parts with allowance for plastic deformation. [Translation of abstract] [DW]

SUB CODE: 13/

Card 2/2

GLAZOV, Vladimir Vladimirovich; MAUMOV, Vasilii Ivanovich;
SHALUN, Grigoriy Borisovich; MAUMOV, V.I., otv. za
vyp.; BELOTSEKOVSKAYA, S.I., red.; GALAKTIONOVA, Ye.N.,
tekhn. red.

[Using synthetic resins in repairing body parts and trim-
mings of motor vehicles] Remont detalei kuzovov i opereniia
avtomobilei s pomoshch'iu sinteticheskikh smol. Moskva,
Avtotransizdat, 1963. 35 p. (MIRA 17:1)
(Motor vehicles--Maintenance and repair)
(Resins, Synthetic)

^{Ya}
ZUBCHANINOV, Vladimir Vasil'yevich; POLYAK, T.B., kandidat tekhnicheskikh nauk, retsenzent; ZAMAKHOVSKIY, L.I., kandidat tekhnicheskikh nauk, retsenzent; GLAZOV, Ya.I., redaktor; LEBEDEV, G.Ye., redaktor; DMITRIYEVA, N.I., tekhnicheskii redaktor.

[Technical and economic analysis of present-day trends in developing cotton spinning and cotton weaving equipment in capitalist countries]
Tekhniko-ekonomicheskii analiz sovremennykh napravlenii v razvitii khlopkopriadil'nogo i khlopkotkatskogo oborudovaniia v kapitalisticheskikh stranakh. Pod red. I.A.I.Glazova. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po legkoi promyshl., 1957. 142 p. (MIRA 10:11)
(Spinning machinery) (Looms)

GLAZOV, Ya.I.

GLAZOV, Ya.I., inzh.

Characteristics of work organization in the United States cotton-
spinning mills (from American technical journals) Tekst. prom.
18 no.3:60-62 Mr '58. (MIRA 11:3)
(United States--Cotton spinning)

GLAZOV, Ye., prokhodchik, Geroy Sotsialisticheskogo Truda.

The sun that illuminated life. Sov.profsoiuzy 16 no.7:28-29
Ap '60. (MIRA 13:4)

1. Deputat Verkhovnogo Soveta RSFSR.
(Nelidovo--Coal mines and mining)

GLAZOV, Yu. Ya.

Dissertation defended for the degree of Candidate of Philological Sciences at the
Institute of the Peoples of Asia

"Morphological Analysis of the Classic Tamil Language."

Vestnik Akad. Nauk, No. 4, 1963, pp 119-145

10266-67 INT(m)/INT(w) ISF(c) INT(r)
ACC NO: A77003090

Journal Code : " / 91-1000000000000000

AUTHOR: Gerasov, Ya. Ya. (Moscow)

CRC: none

TITLE: Harmonic influence coefficients in a deformation of a system of a rod system.

SOURCE: *Mathematics*, no. 4, 1963, p. 45

TOPIC TAGS: Economic analysis, General analysis

ABSTRACT: Generalized expressions are given for the harmonic influence coefficients corresponding to the displacement of a section with coordinate K_1 caused by a single force applied in section K_2 with frequency ω with a change in boundary conditions. A method of determining systems with three to five terms is outlined. The forms of expression of the harmonic influence conditions essentially simplify the comparison of equations and performance of calculations for rod systems with distributed parameters, where the external forces are concentrated along the length of the rods and the boundary conditions vary at the ends. At the same time, the clarity of the calculations performed is increased, especially when it is necessary to select a location for application of load, since the values of the coefficients can be used to judge the result which would be obtained by changing the coordinates of the location of load application or by changing the individual parameters of associated systems without actually solving the equations. Some advantages of this method, especially in the case of a small number of loads along the length of the rod, lie in the fact that a reduction of the order of the determinant to unity occurs.

Fig. cont. has: 2 Figures and 16 Formulas. [JPRS: 38,228]

SUB OCDE: 20 / SUBM DATE: 18Dec65 / ORIG REF: 003

Card 1/15

GLAZOVA, A. I.

PA 152112

USSR/Engineering - Gas Analysis
Casehardening

Oct 49

"Apparatus for Controlling the Process of Gaseous
Casehardening," A. I. Glazova, All-Union Inst
of Adv Materials, 4 pp

"Zavod Lab" Vol XV, No 10 - *mp* 1249-1252

Describes operation of gas analyzer, with aid
of over-all sketch and individual diagrams of
stopcock arrays, gas burette, combustion loop,
absorbing cylinders, and small electric furnace.
Outlines example of calculations made in using
apparatus

152112

1/11/77 0-12-15/27

AUTHORS: Blok, N.I., Glazova, A.I., Pashko, N.S. and Yakimova, A.M. (Moscow)-----

TITLE: Influence of hydrogen on structural transformations in titanium alloys (Vliyeniye vodoroda na strukturnyye prevrascheniya v titanovykh splavakh)

PERIODICAL: Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk, 1956, nr 12, pp 96-99 (USSR)

ABSTRACT: The influence of hydrogen on the plastic properties of titanium alloys, which has recently been widely studied, varies with the form of the titanium in the alloy. The object of the work described was to investigate the influence of hydrogen on structural transformations in alloys with an $\alpha + \beta$ solid solution structure. Alloys VT3 and VT3-1, were studied, their respective compositions being: 0.04, 0.04% C; 2.75, 11.95% Cr; 4.9, 4.6% Al; - , 1.5% Mo; 0.20, 0.20% Fe; 0.00, 0.027% Si; 0.10, 0.11% O. 0.025, 0.042% N. The method used consisted of the non-aqueous electrolytic separation of phases, whose structures were then investigated with

VT/ 4-15-15/27

Influence of Hydrogen on Structural Transformations in Titanium Alloys

cylindrical specimen, and titanium nitride in an evacuated quartz tube and heating to 900°C for 10 hours. Specimens with 0.001, 0.005, 0.025, 0.035, 0.05 and 0.12 wt.% hydrogen were obtained. They were subjected to differing heat treatments. It was found that in the VT3 alloy containing 0.01-0.05% hydrogen the eutectoidal reaction $\beta \rightarrow \alpha + \beta_0$ is faster than in the hydrogen-free alloy. With 0.05-0.08% hydrogen the β -phase forms traces of β_0 on heating. With 0.12% hydrogen the residual β -phase is stabilized and there is no eutectoidal reaction either on cooling after annealing or on heating after 100 hours at 400-450°C. In the VT3-1 alloy containing molybdenum the residual β -phase did not decompose after annealing and heating at 400 and 450°C for 100 hours irrespective of the hydrogen content in the sample tested. In both types of alloy the β -phase with time parameter increases with hydrogen content (Fig. 1) and this effect for the VT3-1 alloy heat-treated in vacuum is less. During the heating

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Influence of Hydrogen on Structural Transformations in Titanium Alloys

of both alloys at 400-450°C the residual β -phase is enriched in chromium and molybdenum and, possibly, loses hydrogen. There are 3 figures, 3 tables and 6 references of which 5 are English and 1 Soviet.

SUBMITTED: 8th August 1957.

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21/12/11 7.1
AUTHORS: Blok, N. I.; Glushko, A. I.; Koshova, G. M.; Lashko, V. F. 2-2-6/60

TITLE: The Phase Analysis of Complex Titanium Alloys
(Fazevyy analiz slozhnykh titanovykh spлавov)

PERIODICAL: Khimicheskaya Laboratoriya, 1960, Vol. 21, No. 1, pp. 141-145 (USSR)

ABSTRACT: In an earlier work various mechanical titanium alloys containing aluminum, chromium, molybdenum and changing amounts of hydrogen were already investigated, as was the phase composition of cast titanium. For the separation of phases a method of electrochemical separation of alloys was developed. The electrolyte was a solution of potassium dichromate, citric acid, glycerol and acetic acid, at a current density of 0.01 A/cm², a terminal voltage of 10 V, at from -70° - -10°C. After the electrolysis the anode precipitates were investigated chemically as well as radiographically. In earlier works the alloys were melted in graphite crucibles the danger of contamination during investigations; therefore the authors evaluated results therefore in the

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The Phase Analysis of Complex Titanium Alloys

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furnaces (till homogenization occurred). The radiograms of heat after-treated (1, 10, 30 hours at 2000°C) anode deposits showed the metal table α -phase while the ω -phase was not observed. The change in the anodic process of the β -phase of two technical alloys (1. 0.5% Al, 3.06% Cr and 4.7% Al, 1.06% Cr, 1.39% H₂), was put down in a table and the authors noted that after an anodizing at 100°C only the β -phase is observed while the intermetallic reaction $\beta + \alpha \rightarrow \text{Cr}_2\text{Ti}$ did not take place. Titanium hydride was isolated for the first time and the authors found that hydrogen dissolves mainly in the β -phase (this was found in collaboration with A. T. Yakimova), if, however, there is no such phase the excess hydrogen then forms the titanium hydrides. According to radiographic structural analysis the Ti-hydride was of crystalline structure of the NaCl-type, while the neutron-diffraction showed a tetragonal structure. The analyses of the anode precipitates treated in a nitrogen current at high temperatures showed that they consist of one or two phases, the wellknown finely-crained TiN and in lower layers the second nitride Ti₂N. The latter is of tetragonal structure. The investigations

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The Phase Analysis of Complex Titanium Alloys

32-2-6/60

of Palty, Margolin and Nielsen concerning the Ti-N system in the ϵ -phase showed a similar structure, the difference however, between the radiograms found by them and the radiograms of the present work, is considerable. There are 5 tables, and 1 reference, 1 of which is Slavic

AVAILABLE: Library of Congress

1. Titanium alloys-Phase studies

Card 3/3

S/762/61/000/000/010/029

AUTHORS: Blok, N. I., Glazova, A. I., Lashko, N. F., Solonina, O. P.

TITLE: Phase composition of the BT3-1 (VT3-1) titanium alloy as a function of the aluminum, chromium, molybdenum, and iron content and of its heat treatment.

SOURCE: Titan v promyshlennosti; sbornik statey. Ed. by S. G. Glazunov. Moscow, 1961, 112-120.

TEXT: This is a report of an experimental investigation occasioned by a recent decrease in the strength of several Ti alloys, including the BT3-1 (VT3-1), as a result of the introduction of higher-quality sponge Ti. The investigation studied the effect of the basic alloying elements Al, Cr, and Mo on the phase composition and the properties of the resulting alloy. The additional consideration of Fe addition was intended primarily to explore the consequence of its introduction as an unavoidable part of cheaper alloying charges. Heat-treatment methods designed to attain maximum strength and adequate ductility (to replace currently used isothermal anneal) were also explored. It was found that: (1) All of the alloying elements of the VT3-1 alloy stimulate the formation therein of a residual or retained β phase; Cr and Mo enter directly into the β phase; with an increase of their content in the

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Phase composition of the BT3-1 (VT3-1) titanium alloy. S/762/61/000/000/010/029

alloy the amount of β phase and the concentration of these elements in it increases; Mo appears to be a more powerful β -phase stabilizer than Cr; (b) Al enters the β phase solely as an addition and affects the increase of the amount of that phase only indirectly by reducing the solubility of Cr and Mo in the α -Ti solid solution.

(2) With increasing Al and Mo content in the VT3-1 alloy the stability of the β phase is enhanced after prolonged aging at 450°C. (3) Isothermal heat treatment leads to the formation of a relatively small amount of β phase; this explains its impaired strength as compared with that of alloys subjected to a two-stage heat treatment consisting of a quenching and a tempering operation (details tabulated).

(4) The difference in the mechanical properties of the two specimen rods of one and the same melt (brittle rupture of one, failure with distinctly plastic deformation of the other) can be explained by the state of the α phase, primarily its form and distribution, and also the size of the primary β -phase particles. There are 2 figures and 4 tables; no references.

ASSOCIATION: None given. 2/2

S/762/61/000/000/013/029

AUTHORS: Blok, N.I., Glazova, A.I., Yakimova, A.M., Lashko, N.F.

TITLE: Investigation of the β phase of the two-phase alloys BT3-1 (VT3-1) and BT8 (VT8).

SOURCE: Titan v promyshlennosti; sbornik statey. Ed. by S. G. Glazunov. Moscow, 1961, 135-141.

TEXT: The paper describes an experimental investigation of the mechanism of H embrittlement of two-phase Ti alloys in which residual β -phase decomposition with separation of chemical compounds does not occur. Whereas in the Ti-Al-Cr alloy BT3 (VT3) the residual β phase decomposes and segregates TiCr_2 and TiH , and thus becomes embrittled, the Ti-Al-Cr-Mo alloy VT3-1 and the Ti-Al-Mo alloy VT8 do not incur such process. X-ray metallography of anode precipitates of these alloys reveals the existence of a β phase alone, in which the elementary-lattice parameter increases with increasing H content in the alloy. The particular objective of the present test is the investigation of the enrichment of the β phase with heavier elements, such as Cr and Mo, the atomic radii of which are smaller than the atomic radius of Ti, during 100-hr aging at 450-500°C. The method employed comprises the electrolytical phase separation (Blok, N.I., et al.,

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Investigation of the β phase of the two-phase alloys... S/762/61/000/000/013/029

Zavodskaya laboratoriya, no. 1, 1956) and X-ray metallography. The electrolytical phase separation was performed by an improved method of anodic dissolution of metals in a waterless electrolyte (2-3 g KSCN, 10 g citric acid, 100 ml glycerol, and 1,200 ml methanol), a current density of 0.01 a/cm², a terminal voltage of 30 v, and a bath temperature of -7 to -10°C. Maximum time 45 min. Introduction and withdrawal of the cylindrical specimen was performed under current; the specimen was then washed twice in methanol at -7°C and was air-dried. The anodic precipitate was scraped off the specimen and preserved at sub-0°C temperature. The Ti, Cr, and Mo contents in the β phase were determined by the usual methods. The H content therein was determined in the universal equipment of A.M. Yakimova (In Trudy komissii po analiticheskoy khimii, "Analiz gazov v metalle," Akad.n.SSSR, v.X, 1960) according to the method described by Yakimova in her paper on pp. 131-134 of the present compendium (Abstract S/762/61/000/000/012/029); chemical analysis is possible only when a single phase is present. Test results are summarized in a full-page table and are graphed. Results: (1) The Cr and Mo content in the β phase of VT3-1 and the Mo content in the β phase of VT8 are considerably greater than their mean content in the alloys. The Al content in the β phases is lower than its mean content in either alloy. For example, the β phase of VT3-1 alloy contains 9.24% Cr, 10.44% Mo, and 2.05% Al, as against 1.93% Cr, 1.5% Mo, and 4.6% Al mean content in the alloy. The β phase of the VT8 alloy contains 25.38% Mo and

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Investigation of the β phase of the two-phase alloys... S/762/61/000/000/013/029

2.44% Al, as against 3.45% Mo and 6.33% Al mean content. (2) Aging of VT3-1 and VT8 alloys entails β -phase enrichment with alloying elements; this is an indication of the occurrence of transformations toward phase equilibrium. (3) The H content of the β phase depends on its total content in the alloy and on the alloying-element enrichment in the β phase. (4) The residual β -phase content of VT3-1 and VT8 alloys increases with increasing H content therein. There are 2 figures, 3 tables, and 4 Russian-language Soviet references cited in the text. The participation of Ye.A. Vinogradova and Ye.I. Zvontsova in the experimental work is acknowledged.

ASSOCIATION: None given.

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S/762/61/000/000/021/029

AUTHORS: Blok, N. I., Glazova, A. I., Kurayeva, V. P., Lashko, N. F.

TITLE: Phase analysis of the BT10 (VT10) titanium alloy.

SOURCE: Titan v promyshlennosti; sbornik statey. Ed. by S. G. Glazunov. Moscow, 1961, 227-231.

TEXT: This paper describes an experimental X-ray and chemical analysis of electrolytically precipitated VT10 alloy (after 1-hr 800°C anneal in vacuum), performed by a method described in Zavodskaya laboratoriya, no. 2, 1958, 141. The investigation was motivated by a desire to determine whether the age hardening of this creep-resistant Ti-Al-Cu-Sn alloy is produced by the separation of some intermetallic-compound phase, since this alloy, like the two-phase Ti-Cu alloys, has no residual β phase that could be fixed by quenching. Reference is made to the phase diagram of A. Joukainen, et al. (J. Metals, v. 4, no. 7, 1952, 766), according to which Ti_2O is the intermetallic phase richest in Ti. The present investigation identified an intermetallic phase of variable composition with a tetragonal face-centered crystal lattice of the Ti_3Cu type, namely $(Ti, Al, Sn)_3Cu$. The phase compositions of VT10 alloy with slightly variable Cu and Al contents and after cooling at various rates, as obtained by the X-ray and the chemical method, are tabulated. All findings support the conclusion that the (Ti, Al, Sn)-to-Cu ratio is extremely close to 3. The Ti_3Cu -type phase thus identified is a solid solution in which some nodes of the

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Phase analysis of the BT10 (VT10) titanium alloy.

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crystalline lattice, ordinarily occupied by Ti, are occupied by Al and Sn atoms. An increase in Cu content from 2 to 3% increases the quantity of $(\text{Ti, Al, Sn})_3\text{Cu}$ continuously from 5.75 to 8.35%. No comparable change occurs upon increase of the Al content from 5 to 6%. It is concluded that the VT10 alloy gives rise to highly dispersive products of a eutectoid reaction $\beta \rightarrow \alpha + (\text{Ti, Al, Sn})_3\text{Cu}$. X-ray analysis indicates that the fundamental phase in VT10 is an α phase, both primary and transformational (α'). No residual β phase can be found in the alloy. It is known that in Ti-Cu alloys the eutectoid decomposition upon cooling from elevated T occurs very rapidly. It proceeds even more speedily in alloys of the Ti-Al-Cu-Sn system, and the β phase decomposes in toto into an α phase and an intermetallic compound. The effects of the temperature levels and rates of cooling on the phase composition are tabulated in detail. The structural changes in the VT10 alloys apparently are determined by three factors: (1) Change in the size of the primary grains; (2) change in the shape of the particles of transformed β phase (α' phase); and (3) change in the shape of the particles of the intermetallic phase $(\text{TiAlSn})_3\text{Cu}$ and the character of its distribution. There are 1 figure, 5 tables, and 4 references (1 Russian-language Soviet, 2 English-language, and 1 German). The participation of Zh.D. Afanas'yeva, Ye.A. Vinogradova, Ye.I. Zvontsova, and L.V. Polyakova in the experimental portion of the investigation is acknowledged.

ASSOCIATION: None given. ^{2/2}

Card 2/2

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21392
S/032/61/027/012/002/015
B119/B147

AUTHORS: Blok, N. I., Glazova, A. I., Lashko, N. P., Kurayeva, V. P.,
Molchanova, Ye. K.
TITLE Phase analysis of alloys on titanium basis

PERIODICAL Zavodskaya laboratoriya, v. 27, no. 12, 1961, 1470 - 1472

TEXT: α - β -alloys with stabilized β -phase, and α -alloys with intermetallic hardening were examined. The individual phases were isolated by anodic solution of the alloy in anhydrous electrolyte (3 g of KCNS or 2 g of LiCl, 10 g of citric acid, and 1200 milliliters of methanol). Thereafter, they were subjected to X-ray structural and chemical analysis. Mo, V, Nb, and Ta were identified as stabilizers for the β -phase, the effect of which decreases in the sequence mentioned. (In the presence of 4% Mo the content of the β -phase in the alloy is 11%; at 4% V, it is 9%, and at 4% Nb or Ta, only 3%). After forging, the anodic deposit of these alloys consists entirely of β -phase. In the presence of 4% Ta, alloys aged for 100 hr at 500°C show only small quantities of β -phase, whereas 4% Mo or V completely prevent the β -phase from decomposing. Ti-Cu alloys containing up to 5% Cu have one phase of the composition Ti_3Cu .

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Phase analysis of alloys on ...

with tetragonal face-centered lattice. A phase of the type Ti_3Cu of different composition was also observed in Ti-Al-Cu-Sn alloys (containing up to 3.5% Cu). An increase of the Cu content of these alloys from 2 to 3.5% results in a rise of the content of $(Ti,Al,Sn)_3Cu$ phase from 5.75 to 6.25 to 8.02 to 8.34%. Thus, strength increases from 95 - 100 to 104 - 110 kg/mm². In this case, specific elongation decreases from 35 to 30 - 22%. Ye. A. Vinogradova, Ye. V. Zvontsova, and L. V. Polyakova assisted in the experiments. There are 1 figure, 3 tables, and 5 references: 2 Soviet and 3 non-Soviet. The two references to English-language publications read as follows: N. Karlsson, J. of the Institute of Metals, 79, 391 (1951); A. Gaukainen, N. J. Grant, C. F. Floe, J. of Metals, 4, no 7, 766 (1952)

Card 2/2

TUMANOV, A.T.; KISHKIN, S.T.; BOKSHTEYN, S.Z.; BLOK, N.I.; PLATONOVA,
A.F.; SOROKINA, K.P.; ZASLAVSKAYA, L.V.; GLAZOVA, A.I.

Nina Mikhailovna Popova. Zav.lab. 29 no.1:103-104 '63.
(MIRA 16:2)

(Popova, Nina Mikhailovna, 1914-1962)

VINOGRADOVA, Ye.A.; GLAZOVA, A.I.; LASHKO, N.F. (Moskva); Prinsipal
uchastnye: GUS'KOVA, Ye.I.; POLYAKOVA, L.V.

Using anodic phase isolation for determining the solubility of
some elements in the α -phase of titanium alloys. Zhur. fiz.
khim. 37 no.12:2734-2739 D '63. (MIRA 17:1)

L 14969-65 EWT(m)/EWA(d)/EWP(t)/EWF(b) Pad ASD(n)-3/AFETR MFW/JD/EW/JG/MLK

ACCESSION NR: AT4048094

S/0000/64/000/000/0075/0083

AUTHOR: Blok, N.I., Glazova, A.I., Kozlova, M.N., Lashko, V.V., Morozova, G.I.,
Sorokina, A.P., Khromova, O.A. 5

TITLE: Comparison of methods for the phase separation of nickel chromium alloys

SOURCE: Spektral'nyye i khimicheskiye metody* analiza materialov (Spectral and

chemical methods of materials analysis); sbornik metodik. MOSCOW, 1984, 78-83

TOPIC TAGS: nickel alloy, chromium alloy, phase separation, Alpha phase, carbide phase, electrolysis

ABSTRACT: The most widely used methods of electrolytic phase separation for heat-stable Ni-Cr alloys were investigated and compared. The baths proposed by different organizations for isolating the α -phase and carbide phase are as follows: 1. 10 g $(\text{NH}_4)_2\text{SO}_4$, 10 g citric acid, 1200 ml H_2O ; 2. 5 g $(\text{NH}_4)_2\text{SO}_4$, 15 ml HNO_3 , 35 g citric acid, 1000 ml H_2O ; 3. 3% $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$, 3.5% NaCl , 5% H_2SO_4 ; 4. 30 g CuSO_4 , 10 g sodium citrate, 5 ml H_2SO_4 , 1000 ml H_2O ; 5. anolyte: 10 g CuSO_4 , 1 g citric acid, 250 ml $\text{C}_2\text{H}_5\text{OH}$, 1000 ml H_2O ; catholyte: 10 g CuSO_4 , 10 g citric acid, 10 ml $\text{C}_2\text{H}_5\text{OH}$.

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ACCESSION NR: AT4048094

1000 ml H₂O; 6. 100 ml H₃PO₄, 1000 ml H₂O. The current density in all cases was 0.05-0.07 amps/cm², for 60 minutes at room temperature. The chemical analysis of the χ -phase and anode residues is described in detail. Two heat-stable Ni-Cr alloys were used: EI437B (0.037 % C, 20.57% Cr, 2.75% Ti, 0.70% Al) and EI617 (0.056% C, 15.17% Cr, 3.67% Mo, 2.00% Ti, 5.30% W, 0.21% V, 1.70 % Al) under different conditions. The tabulated data the electrolytes used are suitable for the

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amps/cm² 1 hr. / 0.15 hr. / 0.15 hr.

ASSOCIATION: none

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APPROVED FOR RELEASE: 09/24/2001

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ACCESSION NR: AT5011355

α phase, most of which is dissolved in the electrolyte. At 20C, as the tungsten content of the alloys increases, the strength characteristics also increase, and the plasticity

24(4)

PHASE I BOOK EXPLOITATION SOV/2545

Feygel'son Ye. M., M. S. Malkevich, S. Ya. Kogan, T. D. Koron-
atova, K. S. Glazova, and M. A. Kuznetsova

Raschet yarkosti sveta v atmosfera pri anizotropnom rasseyanii,
ch. 1 (Computation of Light Intensity in the Atmosphere in
a Case of Anisotropic Scattering, Pt. 1) Moscow, Izd-vo
AN SSSR, 1958. 101 p. (Series: Akademiya nauk SSSR. Insti-
tut fiziki atmosfery. Trudy, nr 1) Errata slip inserted.
2,000 copies printed.

Ed.: G. V. Rozenberg, Doctor of Physical and Mathematical
Sciences; Ed. of Publishing House: V. I. Rydrik.

PURPOSE: This book is intended for physicists and scientists
engaged in the study of atmospheric optics.

COVERAGE: This work contains the results of computation on the
intensity of light scattered anisotropically in the atmosphere
under various physical parameters and functions of scattering.
The solution of integro-differential equations of the theory
of radiative transfer in an anisotropically scattering medium
Card 1/4

Computation (Cont.)

SOV/2545

was obtained by the method of successive approximations. The work was carried out by the staff members of the Laboratory of Atmospheric Optics within the Institute of Physics of the Atmosphere, Academy of Sciences, USSR. No personalities are mentioned. There are 23 references: 14 Soviet, 4 English, 4 German, and 1 French.

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